

RECORD OF COMMUNICATION

TO: Grisell Diaz-Cotto

FROM: Adly A. Michael/ Robert Toth

SUBJECT: QUALITY ASSURED DATA

MESSAGE:

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND
RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

~~Puehach Well Field~~ Case# 37193; SDG# MB4TL1 & MB4TL6
[4 water & 15 soil for Metals+Hg]

REPLY BY: April 4, 2008

Please acknowledge receipt of validated data and return the form to Adly Michael - Edison -MS-215

SIGNATURE: 

DATE: 3/26/08

DATE RECEIVED BY EPA-RSCC: _____

300378



RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

DATE: 3/5/2008
 SUBJECT: CLP Data Package for Quality Assurance Review
 FROM: Hazardous Waste Support Section (HWSS)/RSCC
 TO: HWSS ESAT-TOPO

TDF# 08-0319

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE: Diamond Head Oil

CASE #: 37193

SDG#: MB4TL1, MB4TL6

SAMPLER: CH2M

PROJ. CODE: CO **SITE SPILL #:** KK

#SAMPLES

MATRIX

LAB: CHEM **OPERABLE UNIT:** 00

2

Water

TURN-AROUND-TIME: 21 day

15

Soil

CERCLIS ID #: NJD092226000

FRACTION: Metals + Hg

Contaminant(s) of Concern (If known)

REGION II RSCC DATA TRANSFER LOG

Relinquished By

Received By

Signature

Date/Time

Signature

Date/Time

Rabindranath 3/10/08 9¹⁵ am

Vyomesh Parashar 03/10/08 9:15 AM

Vyomesh Parashar 03/10/08

C-Stanara 3/10/08

C-Stanara 3/13/08

Deane Christine Allen 3/14/08

Rabindranath 3/14/08 11⁵⁰ am

Deane Christine Allen 3/14/08 11⁵⁰ am Rabindranath 3/14/08 11⁵⁰ am

Anurag Kumar 3/14/08 1:10 pm Hamid Sheikh 3/14/08 12:00 pm

Hamid Sheikh 3/14/08 1:23 pm Rabindranath 3/14/08 3¹⁵ am

Rabindranath 3/14/08 3²⁴ am Michelle J. Peña 3/14/08 4:00 pm

Michelle J. Peña 3/14/08 4:30 pm Rabindranath 3/14/08 4:30 pm

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL1

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL1Matrix: (soil/water) SOIL Lab Sample ID: Z1397-01Level: (low/med) LOW Date Received: 02/05/2008% Solids: 51.8Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16100			P
7440-36-0	Antimony	16.2			P
7440-38-2	Arsenic	19.6			P
7440-39-3	Barium	689			P
7440-41-7	Beryllium	0.36	J		P
7440-43-9	Cadmium	10.4		E J	P
7440-70-2	Calcium	20700		E J	P
7440-47-3	Chromium	121			P
7440-48-4	Cobalt	15.9			P
7440-50-8	Copper	444			P
7439-89-6	Iron	76800		E J	P
7439-92-1	Lead	1040		E J	P
7439-95-4	Magnesium	2880			P
7439-96-5	Manganese	558			P
7439-97-6	Mercury	10.8		D	CV
7440-02-0	Nickel	223			P
7440-09-7	Potassium	1070		E J	P
7782-49-2	Selenium	9.7			P
7440-22-4	Silver	4.9			P
7440-23-5	Sodium	818	J		P
7440-28-0	Thallium	4.8	U	N J	P
7440-62-2	Vanadium	74.5			P
7440-66-6	Zinc	1720			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL2

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL1Matrix: (soil/water) SOILLab Sample ID: Z1397-02Level: (low/med) LOWDate Received: 02/07/2008% Solids: 60.5Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6270			P
7440-36-0	Antimony	22.5			P
7440-38-2	Arsenic	23.2			P
7440-39-3	Barium	428			P
7440-41-7	Beryllium	0.37	J		P
7440-43-9	Cadmium	11.7		E J	P
7440-70-2	Calcium	8240		E J	P
7440-47-3	Chromium	117			P
7440-48-4	Cobalt	11.8			P
7440-50-8	Copper	231			P
7439-89-6	Iron	21800		E J	P
7439-92-1	Lead	673		E J	P
7439-95-4	Magnesium	2330			P
7439-96-5	Manganese	219			P
7439-97-6	Mercury	6.8			CV
7440-02-0	Nickel	54.6			P
7440-09-7	Potassium	886		E J	P
7782-49-2	Selenium	4.5	J		P
7440-22-4	Silver	3.6			P
7440-23-5	Sodium	663	J		P
7440-28-0	Thallium	4.1	U	N J	P
7440-62-2	Vanadium	37.0			P
7440-66-6	Zinc	1310			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL3

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL1Matrix: (soil/water) SOILLab Sample ID: Z1397-05Level: (low/med) LOWDate Received: 02/07/2008% Solids: 65.7Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11200		J	P
7440-36-0	Antimony	12.3			P
7440-38-2	Arsenic	22.9		J	P
7440-39-3	Barium	931			P
7440-41-7	Beryllium	0.39	J		P
7440-43-9	Cadmium	12.9		E J	P
7440-70-2	Calcium	23100		E J	P
7440-47-3	Chromium	143		J	P
7440-48-4	Cobalt	13.1			P
7440-50-8	Copper	553		J	P
7439-89-6	Iron	35100		E J	P
7439-92-1	Lead	1390		E J	P
7439-95-4	Magnesium	2900			P
7439-96-5	Manganese	310			P
7439-97-6	Mercury	3.8			CV
7440-02-0	Nickel	267		R	P
7440-09-7	Potassium	1160		E J	P
7782-49-2	Selenium	5.9			P
7440-22-4	Silver	7.3		J	P
7440-23-5	Sodium	841			P
7440-28-0	Thallium	3.8	U	N J	P
7440-62-2	Vanadium	42.3			P
7440-66-6	Zinc	1470		J	P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL4

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL1Matrix: (soil/water) SOIL Lab Sample ID: Z1397-07Level: (low/med) LOW Date Received: 02/12/2008% Solids: 58.8Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8930			P
7440-36-0	Antimony	3.0	J		P
7440-38-2	Arsenic	10.3			P
7440-39-3	Barium	369			P
7440-41-7	Beryllium	1.4			P
7440-43-9	Cadmium	3.3		E J	P
7440-70-2	Calcium	29000		E J	P
7440-47-3	Chromium	66.7			P
7440-48-4	Cobalt	15.5			P
7440-50-8	Copper	350			P
7439-89-6	Iron	43100		E J	P
7439-92-1	Lead	614		E J	P
7439-95-4	Magnesium	5210			P
7439-96-5	Manganese	546			P
7439-97-6	Mercury	1.8			CV
7440-02-0	Nickel	75.4			P
7440-09-7	Potassium	1150		E J	P
7782-49-2	Selenium	5.3	J		P
7440-22-4	Silver	4.4			P
7440-23-5	Sodium	1100			P
7440-28-0	Thallium	4.2	U	N J	P
7440-62-2	Vanadium	35.7			P
7440-66-6	Zinc	462			P
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: _____ Texture: MEDIUMColor After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL5

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL1Matrix: (soil/water) SOIL Lab Sample ID: Z1397-08Level: (low/med) LOW Date Received: 02/12/2008% Solids: 68.9Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6900			P
7440-36-0	Antimony	9.1			P
7440-38-2	Arsenic	34.5			P
7440-39-3	Barium	278			P
7440-41-7	Beryllium	0.73 0.50 JV			P
7440-43-9	Cadmium	1.6		E J	P
7440-70-2	Calcium	4410		E J	P
7440-47-3	Chromium	189			P
7440-48-4	Cobalt	8.5			P
7440-50-8	Copper	475			P
7439-89-6	Iron	17400		E J	P
7439-92-1	Lead	438		E J	P
7439-95-4	Magnesium	3070			P
7439-96-5	Manganese	298			P
7439-97-6	Mercury	5.4			CV
7440-02-0	Nickel	66.5			P
7440-09-7	Potassium	899		E J	P
7782-49-2	Selenium	2.9	J		P
7440-22-4	Silver	2.6			P
7440-23-5	Sodium	726 504 JV			P
7440-28-0	Thallium	3.6	U	N J	P
7440-62-2	Vanadium	29.4			P
7440-66-6	Zinc	698			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP
1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TZ9

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047

Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL1

Matrix: (soil/water) SOIL Lab Sample ID: Z1397-06

Level: (low/med) LOW Date Received: 02/07/2008

% Solids: 60.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4330		J	P
7440-36-0	Antimony	9.5	J		P
7440-38-2	Arsenic	12.3		J	P
7440-39-3	Barium	432			P
7440-41-7	Beryllium	0.82	U		P
7440-43-9	Cadmium	9.9		E J	P
7440-70-2	Calcium	13100		E J	P
7440-47-3	Chromium	73.5		J	P
7440-48-4	Cobalt	8.1	J		P
7440-50-8	Copper	353		J	P
7439-89-6	Iron	57100		E J	P
7439-92-1	Lead	726		E J	P
7439-95-4	Magnesium	1880			P
7439-96-5	Manganese	367			P
7439-97-6	Mercury	4.1			CV
7440-02-0	Nickel	58.6		R	P
7440-09-7	Potassium	663	J	E J	P
7782-49-2	Selenium	7.2			P
7440-22-4	Silver	4.0		J	P
7440-23-5	Sodium	564	J		P
7440-28-0	Thallium	2.1	J	N J	P
7440-62-2	Vanadium	27.6			P
7440-66-6	Zinc	819		J	P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUM

Color After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL6

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOIL Lab Sample ID: Z1539-01Level: (low/med) LOW Date Received: 02/14/2008% Solids: 60.2Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4270			P
7440-36-0	Antimony	5.0	J		P
7440-38-2	Arsenic	23.1			P
7440-39-3	Barium	251			P
7440-41-7	Beryllium	0.82	U		P
7440-43-9	Cadmium	1.8			P
7440-70-2	Calcium	9570			P
7440-47-3	Chromium	127			P
7440-48-4	Cobalt	5.6	J		P
7440-50-8	Copper	222			P
7439-89-6	Iron	12900			P
7439-92-1	Lead	447			P
7439-95-4	Magnesium	5510			P
7439-96-5	Manganese	126			P
7439-97-6	Mercury	2.9			CV
7440-02-0	Nickel	40.8			P
7440-09-7	Potassium	695	J	E J	P
7782-49-2	Selenium	5.8	U		P
7440-22-4	Silver	2.3			P
7440-23-5	Sodium	654	J		P
7440-28-0	Thallium	4.1	U	N J	P
7440-62-2	Vanadium	26.4			P
7440-66-6	Zinc	487			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP
1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL7

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047

Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6

Matrix: (soil/water) SOIL Lab Sample ID: Z1539-02

Level: (low/med) LOW Date Received: 02/14/2008

% Solids: 59.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6240			P
7440-36-0	Antimony	4.6	J		P
7440-38-2	Arsenic	20.2			P
7440-39-3	Barium	183			P
7440-41-7	Beryllium	0.84 0.30	IL		P
7440-43-9	Cadmium	2.1			P
7440-70-2	Calcium	2820			P
7440-47-3	Chromium	87.8			P
7440-48-4	Cobalt	7.8	J		P
7440-50-8	Copper	176			P
7439-89-6	Iron	16000			P
7439-92-1	Lead	300			P
7439-95-4	Magnesium	1960			P
7439-96-5	Manganese	111			P
7439-97-6	Mercury	5.7			CV
7440-02-0	Nickel	42.6			P
7440-09-7	Potassium	589	J	E J	P
7782-49-2	Selenium	5.9	U		P
7440-22-4	Silver	2.3			P
7440-23-5	Sodium	468	J		P
7440-28-0	Thallium	4.2	U	N J	P
7440-62-2	Vanadium	21.2			P
7440-66-6	Zinc	477			P
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL8

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOIL Lab Sample ID: Z1539-03Level: (low/med) LOW Date Received: 02/15/2008% Solids: 57.4Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2060			P
7440-36-0	Antimony	2.3	J		P
7440-38-2	Arsenic	2.7			P
7440-39-3	Barium	38.3			P
7440-41-7	Beryllium	0.87	U		P
7440-43-9	Cadmium	0.43	J		P
7440-70-2	Calcium	1330			P
7440-47-3	Chromium	16.2			P
7440-48-4	Cobalt	1.4	J		P
7440-50-8	Copper	30.1			P
7439-89-6	Iron	4460			P
7439-92-1	Lead	77.8			P
7439-95-4	Magnesium	988			P
7439-96-5	Manganese	27.3			P
7439-97-6	Mercury	3.4			CV
7440-02-0	Nickel	6.3	J		P
7440-09-7	Potassium	381	J	E J	P
7782-49-2	Selenium	6.1	U		P
7440-22-4	Silver	0.25	J		P
7440-23-5	Sodium	659	J		P
7440-28-0	Thallium	4.4	U	N	P
7440-62-2	Vanadium	6.8	J		P
7440-66-6	Zinc	162			P
57-12-5	Cyanide				NR

Color Before: BROWN Clarity Before: _____ Texture: MEDIUMColor After: YELLOW Clarity After: _____ Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TL9

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOIL Lab Sample ID: Z1539-04Level: (low/med) LOW Date Received: 02/15/2008% Solids: 68.9Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3670			P
7440-36-0	Antimony	2.8	J		P
7440-38-2	Arsenic	7.7			P
7440-39-3	Barium	142			P
7440-41-7	Beryllium	0.73	U		P
7440-43-9	Cadmium	1.3			P
7440-70-2	Calcium	2000			P
7440-47-3	Chromium	48.1			P
7440-48-4	Cobalt	5.0	J		P
7440-50-8	Copper	110			P
7439-89-6	Iron	10900			P
7439-92-1	Lead	213			P
7439-95-4	Magnesium	993			P
7439-96-5	Manganese	110			P
7439-97-6	Mercury	2.2			CV
7440-02-0	Nickel	210			P
7440-09-7	Potassium	361	J	E	J
7782-49-2	Selenium	5.1	U		P
7440-22-4	Silver	1.2	J		P
7440-23-5	Sodium	290	J		P
7440-28-0	Thallium	3.6	U	N	J
7440-62-2	Vanadium	17.9			P
7440-66-6	Zinc	266			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP
1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TM0

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047

Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6

Matrix: (soil/water) SOIL Lab Sample ID: Z1539-05

Level: (low/med) LOW Date Received: 02/16/2008

% Solids: 63.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3750			P
7440-36-0	Antimony	4.9	J		P
7440-38-2	Arsenic	11.8			P
7440-39-3	Barium	154			P
7440-41-7	Beryllium	0.78	U		P
7440-43-9	Cadmium	1.3			P
7440-70-2	Calcium	4490			P
7440-47-3	Chromium	58.0			P
7440-48-4	Cobalt	3.8	J		P
7440-50-8	Copper	135			P
7439-89-6	Iron	17300			P
7439-92-1	Lead	471			P
7439-95-4	Magnesium	1010			P
7439-96-5	Manganese	140			P
7439-97-6	Mercury	3.6			CV
7440-02-0	Nickel	31.9			P
7440-09-7	Potassium	284	J	E J	P
7782-49-2	Selenium	5.5	U		P
7440-22-4	Silver	1.6			P
7440-23-5	Sodium	298	J		P
7440-28-0	Thallium	3.9	U	N J	P
7440-62-2	Vanadium	13.3			P
7440-66-6	Zinc	425			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUM

Color After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TM1

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOIL Lab Sample ID: Z1539-06Level: (low/med) LOW Date Received: 02/16/2008% Solids: 62.5Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4720			P
7440-36-0	Antimony	5.4	J		P
7440-38-2	Arsenic	14.7			P
7440-39-3	Barium	270			P
7440-41-7	Beryllium	0.80	U		P
7440-43-9	Cadmium	4.2			P
7440-70-2	Calcium	10300			P
7440-47-3	Chromium	88.6			P
7440-48-4	Cobalt	6.0	J		P
7440-50-8	Copper	210			P
7439-89-6	Iron	23800			P
7439-92-1	Lead	590			P
7439-95-4	Magnesium	1690			P
7439-96-5	Manganese	206			P
7439-97-6	Mercury	7.2			CV
7440-02-0	Nickel	51.7			P
7440-09-7	Potassium	623	J	E	J P
7782-49-2	Selenium	5.6	U		P
7440-22-4	Silver	2.5			P
7440-23-5	Sodium	666	J		P
7440-28-0	Thallium	4.0	U	N	J P
7440-62-2	Vanadium	22.0			P
7440-66-6	Zinc	551			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TM2

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOIL Lab Sample ID: Z1539-07Level: (low/med) LOW Date Received: 02/16/2008% Solids: 48.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2340			P
7440-36-0	Antimony	5.7	J		P
7440-38-2	Arsenic	17.1			P
7440-39-3	Barium	264			P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	1.7			P
7440-70-2	Calcium	6520			P
7440-47-3	Chromium	40.6			P
7440-48-4	Cobalt	9.0	J		P
7440-50-8	Copper	402			P
7439-89-6	Iron	40400			P
7439-92-1	Lead	623			P
7439-95-4	Magnesium	985	J		P
7439-96-5	Manganese	216			P
7439-97-6	Mercury	12.2		D	CV
7440-02-0	Nickel	62.4			P
7440-09-7	Potassium	284	J	E	P
7782-49-2	Selenium	7.2	U		P
7440-22-4	Silver	4.3			P
7440-23-5	Sodium	615	J		P
7440-28-0	Thallium	5.2	U	N	P
7440-62-2	Vanadium	17.1			P
7440-66-6	Zinc	560			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TM3

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOIL Lab Sample ID: Z1539-08Level: (low/med) LOW Date Received: 02/19/2008% Solids: 58.8Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5260			P
7440-36-0	Antimony	5.7	J		P
7440-38-2	Arsenic	17.5			P
7440-39-3	Barium	216			P
7440-41-7	Beryllium	0.84	U		P
7440-43-9	Cadmium	3.4			P
7440-70-2	Calcium	3940			P
7440-47-3	Chromium	93.2			P
7440-48-4	Cobalt	7.5	J		P
7440-50-8	Copper	221			P
7439-89-6	Iron	26100			P
7439-92-1	Lead	391			P
7439-95-4	Magnesium	1610			P
7439-96-5	Manganese	184			P
7439-97-6	Mercury	18.2		D	CV
7440-02-0	Nickel	53.1			P
7440-09-7	Potassium	537	J	E J	P
7782-49-2	Selenium	5.9	U		P
7440-22-4	Silver	2.7			P
7440-23-5	Sodium	457	J		P
7440-28-0	Thallium	4.2	U	N J	P
7440-62-2	Vanadium	22.2			P
7440-66-6	Zinc	934			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB4TM4

Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) SOILLab Sample ID: Z1539-09Level: (low/med) LOWDate Received: 02/19/2008% Solids: 66.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6430			P
7440-36-0	Antimony	9.3			P
7440-38-2	Arsenic	28.7			P
7440-39-3	Barium	579			P
7440-41-7	Beryllium	0.76 0.50	I U		P
7440-43-9	Cadmium	4.3			P
7440-70-2	Calcium	6690			P
7440-47-3	Chromium	142			P
7440-48-4	Cobalt	9.6			P
7440-50-8	Copper	317			P
7439-89-6	Iron	29000			P
7439-92-1	Lead	765			P
7439-95-4	Magnesium	2310			P
7439-96-5	Manganese	280			P
7439-97-6	Mercury	6.3			CV
7440-02-0	Nickel	68.9			P
7440-09-7	Potassium	927		E J	P
7782-49-2	Selenium	5.3	U		P
7440-22-4	Silver	4.2			P
7440-23-5	Sodium	944			P
7440-28-0	Thallium	3.8	U	N J	P
7440-62-2	Vanadium	37.8			P
7440-66-6	Zinc	864			P
57-12-5	Cyanide				NR

Color Before: BROWN

Clarity Before: _____

Texture: MEDIUMColor After: YELLOW

Clarity After: _____

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

LOT MB4TM5 BLANK

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) WATERLab Sample ID: Z1539-12Level: (low/med) LOWDate Received: 02/20/2008% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200 164	JU		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	20.4	J		P
7440-41-7	Beryllium	5.0 0.40	JU		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	14300			P
7440-47-3	Chromium	2.5	J		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	9.3	J		P
7439-89-6	Iron	5850			P
7439-92-1	Lead	10.9			P
7439-95-4	Magnesium	3620	J		P
7439-96-5	Manganese	38.2			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	2920	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	10.0	U		P
7440-23-5	Sodium	18000			P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	140			P
57-12-5	Cyanide				NR

Color Before: COLORLESSClarity Before: CLEAR

Texture: _____

Color After: COLORLESSClarity After: CLEAR

Artifacts: _____

Comments:

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

IB MB4TM6Lab Name: CHEMTECH CONSULTING GROUP Contract: EPW06047Lab Code: CHEM Case No.: 37193 NRAS No.: _____ SDG No.: MB4TL6Matrix: (soil/water) WATER Lab Sample ID: Z1539-13Level: (low/med) LOW Date Received: 02/20/2008% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	200 85.7	JU		P
7440-36-0	Antimony	60.0	U		P
7440-38-2	Arsenic	10.0	U		P
7440-39-3	Barium	200	U		P
7440-41-7	Beryllium	5.0 0.40	JU		P
7440-43-9	Cadmium	5.0 2.0	JU		P
7440-70-2	Calcium	317	J		P
7440-47-3	Chromium	2.9	J		P
7440-48-4	Cobalt	50.0	U		P
7440-50-8	Copper	25.0	U		P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	10.0	U		P
7439-95-4	Magnesium	5000	U		P
7439-96-5	Manganese	15.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	40.0	U		P
7440-09-7	Potassium	78.3	J		P
7782-49-2	Selenium	35.0	U		P
7440-22-4	Silver	0.90	J		P
7440-23-5	Sodium	477	J		P
7440-28-0	Thallium	25.0	U		P
7440-62-2	Vanadium	50.0	U		P
7440-66-6	Zinc	48.1	J		P
57-12-5	Cyanide				NR

Color Before: COLORLESSClarity Before: CLEAR

Texture: _____

Color After: COLORLESSClarity After: CLEAR

Artifacts: _____

Comments:

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Appendix A.2

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Inorganic Data Review Narrative

Case# 37193	Site: DIAMOND HEAD	Soil: 15
SDG# MB4TL1, MB4TL6	Lab: CHEMTECH	Water: 2
Sampling Team: CH2M	Reviewer: C. STANCA	Other: 0

A.2.1 Data Validation Flags:

The following flags may have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated

R and Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

U - This data validation qualifier is applied to sample results \geq MDL when associated blank is contaminated

Fully Usable Data - The results that do not carry "J" or "red-line" are fully usable.

A.2.2 Laboratory Qualifiers:

The CLP laboratory applies a contractual qualifier on all Form I=S and the QC Form when a QC analysis is outside the control limits. These qualifiers are not applied on the Lotus or XLS spreadsheets. These qualifiers and their meanings are as follows:

N: This qualifier indicates the lack of accuracy in the reported result, and is applied when matrix spiked sample recovery is outside the control limits.

E: This qualifier indicates the presence of interference, and is applied when the ICP serial dilution is outside the control limits.

*: This qualifier indicates the lack of precision, and is applied on Form I=S and Form VI when the Lab Duplicate analysis is outside the control limits.

U: This is a concentration qualifier that laboratory applies to a non-detected result which is essentially less than the Method Detection Limit (MDL). A non-detected result of an analyte is indicated by the Contract Required Quantitation Limit (CRQL) of that analyte suffixed with "U".

J: This is also a concentration qualifier that laboratory applies to a positive result below the CRQL.

NOTE: The laboratory qualifiers are crossed out and replaced with the appropriate data validation qualifiers (J, R or U) by the data validator.

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A.2.3.1 Data Case Description:

This case consists of two (2) aqueous and fifteen (15) soil samples collected at the Diamond Head Oil site between 02/04/08 and 02/19/08 for TAL Metals analysis according to the USEPA CLP SOW No. ILM05.4. Samples MB4TL3/MB4TZ9 is the field duplicate pair for this sampling event. Matrix spike, laboratory duplicate and serial dilution analyses were performed on samples MB4TM4 and MB4TL2. The two aqueous samples in this case were identified as field blanks. Consequently, no matrix spike, laboratory duplicate or ICP serial dilution analyses were performed for the aqueous matrix.

As per EPA Technical Direction Form (TDF) only the following criteria were reviewed by the data validator: Holding Time, CRQL Standard, Matrix Spike, ICS, Laboratory Duplicate, Field Duplicate, ICP Serial Dilution, Percent Solids, and Field Blank. The qualifiers applied on Form Is and CADRE EXCEL spreadsheets are based on ESAT data review of the above mentioned criteria and the attached CADRE Reports.

A.2.3.2 CSF Audit: No problems.

A.2.3.3 Technical Review:

SDG MB4TL6

ICB/CCB

The Calibration Blanks values were \geq MDL but \leq CRQL for Al and Be. (Only analytes that required qualifications were mentioned.) The following associated positive results \leq CRQL were raised to the CRQL and qualified "U".

"U" -> Al -> MB4TM5, MB4TM6
Be -> MB4TL7, MB4TM4 - MB4TM6

PREPARATION BLANK

The Preparation Blank values were \geq MDL but \leq CRQL for Al, Be, and Cd. (Only analytes that required qualifications were mentioned.) The associated positive results \leq CRQL were raised to the CRQL and qualified "U". The Al and Be results were previously qualified. No action was taken for these analytes.

"U" -> Cd - MB4TM6

MATRIX SPIKE

The matrix spike recovery was outside the control limits of 75 - 125% when sample concentration was less than 4 X spike concentration for T1 (%R = 62). The associated results have been considered estimated and qualified "J".

"J" -> T1 -> MB4TL6 - MB4TL9, MB4TM0 - MB4TM4

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Appendix A.2

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ICP SERIAL DILUTION

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 when the initial concentration was equal to or greater than 50 X MDL for K (%D = 20). All associated sample results greater than MDL have been considered estimated and flagged "J".

"J" -> K -> MB4TL6 - MB4TL9, MB4TM0 - MB4TM4

FIELD BLANK

The sequence of sampling in relation to filed blanks indicates that no sample could be associated with the blanks. (The field blank was collected after the field samples). No action was taken based on this criterion.

PERCENT SOLIDS

The percent solids was less than 50 for sample MB4TM2. All sample results not previously qualified have been considered estimated and flagged "J".

"J" -> All results not previously qualified -> MB4TM2

SDG MB4TL1

CRQL STANDARD

The CRQL standard recoveries fell outside the control limits of 70 - 130% for Tl (%R₁ = 134). (Only out of control recoveries that affected samples in this SDG were mentioned.) All associated positive results within the affected range of True Value \pm CRQL have been considered estimated and flagged "J".

"J" -> Tl -> MB4TZ9

ICB/CCB

The Calibration Blanks values were \geq MDL but \leq CRQL for Be and Na. (Only analytes that required qualifications were mentioned.) The following associated positive results \leq CRQL were raised to the CRQL and qualified "U".

"U" -> Be, Na -> MB4TL5

MATRIX SPIKE

The matrix spike recovery was outside the control limits of 75 - 125% when sample concentration was less than 4 X spike concentration for Tl (%R = 72). The associated results have been considered estimated and qualified "J".

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"J" -> Tl -> MB4TL1 - MB4TL5, MB4TZ9*

FIELD DUPLICATE

The RPD between sample (MB4TL3) and duplicate (MB4TZ9) results was $\geq 35\%$ but less than 120% for Al, As, Ca, Cr, Cu, Fe, Pb and Zn and greater than 120 for Ni when both sample and duplicate results were greater than 5 X CRQL. All associated Ni results greater or equal to CRQL have been rejected. All other associated results have been estimated.

"J" -> Al, As, Ca, Cr, Cu, Fe, Pb Zn -> MB4TL3, MB4TZ9

"R" -> Ni -> MB4TL3, MB4TZ9

The absolute difference between sample (MB4TL3) and duplicate (MB4TZ9) results was greater than 2X CRQL for Ag when sample and/or duplicate results were less than 5 X CRQL. All associated sample results $\leq 5XCRQL$ have been considered estimated and flagged "J".

"J" -> Ag -> MB4TL3, MB4TZ9

ICP SERIAL DILUTION

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 when the initial concentration was equal to or greater than 50 X MDL for Cd (%D = 19), Ca (%D = 13), Fe (%D = 11), Pb (%D = 12), and K (%D = 13). All associated sample results greater than MDL have been considered estimated and flagged "J".

"J" -> Cd, Ca*, Fe*, Pb*, K -> MB4TL1 - MB4TL5, MB4TZ9



* already qualified

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Appendix A.2

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A.2.3.4 **Contract-Problem/Non-Compliance:**

SDG MB4TL6

Form I: The mercury results were incorrect for several samples. Corrected Form Is were submitted by the laboratory and inserted in the package.

HWSS Reviewer:

HS

Signature

Date:

3/14/08

Contractor
Reviewer:

Constantin Stano

Signature

Date:

3/14/08

Verified by:

Robert Baker

Signature

Date:

3/14/08

SOP No. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW - ILM05.3

(SOP Revision 13)

United States Environmental Protection Agency
Region 2

Date: September 2005

PREPARED BY:

Hanif Sheikh
Hanif Sheikh, Quality Assurance Chemist
Hazardous Waste Support Section

DATE: 9/30/05

APPROVED BY:

Linda M. Manuel
Linda Manuel, Chief
Hazardous Waste Support Section

DATE: 9/30/05

APPROVED BY:

Robert Runyon
Robert Runyon, Chief
Hazardous Waste Support Branch

DATE: 10/5/05

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1.0 Scope

- 1.1 This Standard Operating Procedure (SOP) applies to the evaluation of Routine Analytical Services (RAS) inorganic data generated in accordance with the EPA Contract Laboratory Program (CLP) protocols.
- 1.2 This Region 2 inorganic data validation SOP is used to determine the usability of analytical data generated from water and soil/sediment samples collected from Superfund sites in EPA Region 2.
- 1.3 Data should be generated and validated in accordance with the site specific Project Quality Objectives (PQOs) developed prior to the sample collection event. This SOP can be customized to validate the data according to the site specific PQOs. If the site specific DQOs are not available, this SOP must be used in its entirety.
- 1.4 This SOP is based, for the most part, upon analytical and quality assurance requirements specified in the Statement of Work SOW-ILM05.3, as well as in the final (October 2004) of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. The SOP Checklist, Appendix A.1, provides guidance in conducting the data validation. The result of the use of this SOP is a **Total Review of the data: Technical plus Contract - Compliance Review.**

2.0 Contract Compliance Review

This type of review is the first step in data validation which is carried out to ensure that the CLP laboratory has analyzed the environmental samples in accordance with the Statement of Work (SOW), and provided a data package which is both complete and compliant. This means that laboratory's procedures were performed exactly as specified in the CLP Statement of Works (SOW) and the data package contains all the deliverables including the information required under the contract.

2.1 Completeness

The data validator must check the entire data package to ensure that all deliverables required under the CLP contract are present and legible. In addition, copies of the Contract Compliance Screening (CCS) report, re-submittal from the laboratory, and Regional documentation should also be present in the data package. In Region 2, the data package completeness check is currently performed by the Regional Sample Control Coordinator (RSCC) for each Sample Delivery Group (SDG). The data package is not released to the data validator until all the required deliverables are received

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from the laboratory.

2.2 Compliance

The data validator must check to ensure that all steps from sample receipt through sample preparation, analysis, data calculation and reporting are documented, and the information/data required under the contract is present in the appropriate reporting Forms and laboratory logs.

2.3 Contract Compliance Screening (CCS)

This screening step essentially checks the data package for the Completeness and Compliance requirements, and is performed by the Sample Management Office (SMO) currently operated by Computer Sciences Corporation (CSC), an EPA contractor. The CCS Report outlines the incomplete and non-compliant items as "Defects" in the data package, and is sent to the laboratory which is required to provide additional or missing information/data required under the contract. The CCS Report for each SDG is transmitted electronically by the SMO to the Regional office. The CCS Report is intended to aid the data validator in locating any problems, both corrected and uncorrected. The incorrect original deliverable(s) of the data package must be replaced by the re-submittal(s) received from the laboratory in response to the CCS Report. The data validation should, however, be carried out even if the CCS Report is not available.

Web-based CCS is available for CLP laboratories to check their data prior to its delivery to EPA.

3.0 Technical Review

Technical review of the RAS data is carried out on the complete and compliant data to ensure its **validity** (i.e., data is of known quality and scientifically valid) and **usability** (i.e., data set is sufficiently complete and of sufficient quality to support a decision or an action described in the specific objectives of a data collection activity). The technical review process provides information on analytical limitations of data, if any, based on specific Quality Assurance/Quality Control (QA/QC) criteria. This is accomplished by performing an in-depth review of both the field deliverables which document the field sampling activities, and the laboratory analytical data deliverables which document the laboratory activities carried out to generate the reported data. Essentially, the validator shall first ensure that the data package is complete and compliant. The validator shall then evaluate data/information on all these deliverables (Final data sheets, Forms for QC analyses Chain-of-Custody/Traffic Report Forms, raw data, etc.) against the QA/QC acceptance criteria specified in the SOP "Checklist" (Appendix A.1). The validator must answer each question in the

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" Checklist" and take an appropriate action as required under "Action" to qualify the data. As a result of the technical review, the data validator may qualify some of the data as **rejected** or as **estimated**. The data validator shall write a **Data Review Narrative** documenting the qualified data and the reason(s) for the qualification.

3.1 If the **raw data** necessary to support the reported results are not provided, the data validation must not be performed. The laboratory must be contacted to obtain missing raw data.

3.2 If batch quality control analyses are performed on samples other than **site specific samples**, data must not be validated or at best be considered as estimated. The data user must be notified of this action.

3.3 **QA/QC Acceptance Criteria**

In order that reviews be consistent among reviewers, QA/QC protocol (stated in Appendix A.1) should be strictly adhered to. If a lab provides more than one set of QC analyses or more than one particular QC analysis for an SDG, the validator shall use the worst QC analysis to evaluate the SDG data. Professional judgement should only be used in the rare instances not addressed in the "Checklist".

3.4 **Data Validation Flags**

Three types of data validation flags (J, R & U) are used in Region 2 to qualify the data.

3.4.1 **Flag "R" indicates Rejected Data**

Sample results determined to be unacceptable must preferably be lined over and flagged " R" with a red pencil only on the Inorganic Analysis Data Sheets (CLP Form I's). Data rejected on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user **must not** use the rejected data to make environmental decisions.

3.4.2 **Flag "J" indicates Estimated Data**

Sample results determined to be estimated must be flagged "J" with a red pencil only on the CLP Form I's. Data are flagged (J) when a QC analysis falls outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result even though several associated QC analyses may fail. The "J" data may be biased high or low.

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3.4.3 **Flg "U" indicates Non-Detects**

Sample results \geq MDL associated with a contaminated blank are flagged "U" with a red pencil only on Form I's.

4.0 **Contractual Qualifiers**

The CLP laboratory applies contractual qualifiers on all Form I's and the QC Forms when QC analyses are outside the control limits. These qualifiers are not applied on the Lotus or XLS spreadsheets with the exception of U and J. The contractual qualifiers and their meanings are as follows:

N : This qualifier indicates the lack of accuracy in the reported result, and is applied when matrix spiked sample recovery is outside the control limits.

E : This qualifier indicates the presence of interference, and is applied when the ICP serial dilution analysis is outside the control limits.

* : This qualifier indicates the lack of precision, and is applied to sample results on Form I's and Form VI when the Lab Duplicate analysis is outside the control limits.

U : This is a concentration qualifier that laboratory applies to a non-detected result which is essentially less than the Method Detection Limit (MDL). A non-detected result of an analysis is indicated by the Contract Required Quantitation Limit (CRQL) of that analyze suffixed with "U".

J : This is a concentration qualifier that the laboratory applies to a positive result below the CRQL (i.e., \geq MDL but $<$ CRQL).

NOTE: The laboratory qualifiers are crossed out and replaced with the appropriate data validation qualifiers (J, R or U) by the data validator.

1.0 **Rounding Rule**

The data reviewer must follow the standard practice to round off percent recoveries on the QC reporting forms.

1.0 **Data Review Narrative (Appendix A.2)**

The data review narrative should be written using the format of Appendix A.2. The narrative should indicate the QC analyses outside the acceptance limits and the actions taken to qualify the associated data. The narrative should be

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prepared on a Personal Computer or a typewriter. If hand-written, under no circumstances should a pencil be used to write the narrative. The Data Review Narrative should be written in four (4) Sections: (i) Data Case Description, (ii) Complete SDG File (CSF) Audit Section, (iii) Technical Review Section, and (iv) Contract-Problems/Non-Compliance Section.

5.1 Data Case Description Section

The data validator must briefly describe the data case in this Section, outlining important information such as the number of samples, their matrix, sampling date(s), analysis (TAL metals, mercury or cyanide), samples used for QC analyses, Field Blank(s), Field Duplicates, etc.

5.2 Complete SDG File (CSF) Audit Section

The data validator must perform an audit on each SDG in the data package to ensure that all SDG-specific documents (sampling, samples shipping and receiving, telephone contact logs, etc.) are present in the data case. The audit shall also discover any discrepancy in the deliverables. In Region 2, this audit is currently performed by the ESAT data validator and its findings reported under "Comments" on a CSF inventory checklist. The validator informs the CLP Project Officer (PO) of the missing or additional information/deliverable required for data validation. The PO then contacts the lab for the desired deliverable/information. The findings of the CSF audit are reported in the CSF Section of the Data Review Narrative (Appendix A.2).

5.3 Technical Review Section

The data validator shall report in this Section only the rejected (R) and estimated data (J) and the data rendered non-detects (U) as a result of technical review. It is imperative that the data reviewer highlights (i) QC analysis criteria applied to reject (R) or flag (J, U) the data, (ii) Samples rejected (R) or flagged (J, U), and (iii) the QC analysis out of control limits. The rest of the data that are not qualified (rejected or estimated) are not reported in this Section, and should be considered **fully useable**.

5.4 Contract-Problems/Non-Compliance Section

All the CLP non-compliant items detected during data review must be reported in this Section.

6.0 Computer-Aided Data Review and Evaluation (CADRE)

CADRE is a computer program that performs semi-automated Quality Assurance (QA) and Quality Control (QC) checks of results from the chemical analysis of soil and water samples according to the CLP protocols. After the CADRE data

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qualification is complete, a Lotus 1,2,3 spreadsheet or an XLS spreadsheet with data validation qualifiers (R,J,U) is generated for each SDG. Currently, Sample Management Office (SMO) performs this task using Data Assessment Tool (DAT), a software-driven process, and forwards to the Regions the customized electronic spreadsheets (Lotus 1,2,3 or XLS spreadsheet) and QC reports via the DART (Data Assessment Rapid Transmittal) system. Manual data validation is performed in conjunction with electronic data validation which can only be done by a trained and experienced data validator. The manual data review complements CADRE's findings to complete an assessment of data quality in a shorter time than by a solely manual process. The data validator must review the XLS or Lotus 1,2,3 spreadsheet against Form I's to ensure that the same results on Form I's and the Spreadsheet are qualified with the same data validation qualifiers. The spreadsheet for each SDG is provided with the Data Review Narrative.

7.0 Performance Evaluation Sample (PES) Based Data Validation Strategy

7.1 Scope and Summary

This strategy offers the use of Performance Evaluation Samples (PES) in the data validation process as a means of ensuring the quality of the CLP data while significantly reducing the validation time. The single blind PES provided by EPA (or any other reputable firm) is analyzed with samples of each matrix in a Sample Delivery Group (SDG). A software program (e.g., PEAC TOOLS, SPS Web or equivalent) is used to determine whether or not the PES results fall within the previously statistically determined acceptance limits ("Action Low" and "Action High") for the Contaminants of Concern (COC). The PES results falling within the Action Limits are considered as acceptable results and may be designated as "Passed" analytes, and results of the analytes falling outside the Action Limits are considered as unacceptable and may be designated as "Failed" analytes. In either case ("Passed" Analytes or "Failed" analytes), the associated data is validated according to the Region 2 data validation SOP HW-2 in conjunction with the latest version of the WinCadre QC reports. The following strategy (procedure) is used:

7.2 "Passed" COC

If the COC in an SDG are within statistically generated Action Limits, the data validation is conducted according to QC analyses indicated by check marks (√) in the "Review COC For" column of the Table I. The SDG samples are validated using the Region 2 data validation SOP in conjunction with the latest version of the WinCADRE QC reports. The validation

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flags (J, R, U) are applied on Form I's as well on the CADRE Lotus 1,2,3 or XLS spreadsheet. Corrections, if needed, are then made on the Lotus or XLS spreadsheet to ensure that all results on Form I's carry the same data validation and concentration flags as are on the Lotus or XLS Spreadsheet.

7.3 "Failed" COC

If the COC in an SDG are not within the statistically generated Action Limits, the data validation is conducted according to the data validation SOP QC Criteria indicated by check marks (√) in the "Review COC For" column of Table II. The SDG samples are validated using the Region 2 data validation SOP in conjunction with the latest version of the WinCADRE QC reports. The data validation flags (J,R,U) are applied on Form I's as well on the CADRE Lotus 1,2,3 or XLS Spreadsheet. Corrections, if needed, are then made on the Lotus or XLS spreadsheet to ensure that all results on Form I's carry the same data validation and concentration flags as are on the Lotus or XLS Spreadsheet.

7.4 COC "Not Evaluated"

Acceptance limits for the analytes not present/spiked in the PE sample are not provided on the PES Scoring Evaluation Report. Such analytes will be marked as "Not Evaluated" in the PES Evaluation Column. These analytes will be validated much the same way as the "Failed Analytes".

The failed analytes and the analytes not present/spiked in the PE sample require data validation according to the QC criteria specified in Table II, and are identified by the TOPO in the TDF for the Case/SDG.

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Table I

Passed PES - All Contaminants of Concern are within the limits
(Action Low \leq PES Result \leq Action High)

QC Criteria	Review COC for
Holding Time & Preservation	√
Initial Calibration	
Initial Calibration Verification	
CRQL Standard	√
Blanks-Initial & Continuing	
Preparation Blank	
ICP Interference Check Sample	
Pre- Digestion/Distillation Matrix Spike	
Post Digestion Spike	
Laboratory Duplicate	
Field Duplicates Comparison	√
Lab Control Sample	
ICP Serial Dilution	
Field Blank Contamination	√
Percent Solids	√
Transcription/Computation Check	
Raw Data	
Total vs. Dissolved Concentrations Comparison	√

- The CSF (Complete SDG File) audit will be completed before the PES validation strategy is applied.
- Comparison of the Lotus or XLS Spreadsheet must be after the PES validation strategy is applied. The Contract
- Compliance can be checked after the PES validation strategy is applied.

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Table II

Failed PES - Contaminants of Concern are not within the limits
(PES Result \leq Action Low, PES Result \geq Action High OR The Limits Not Established)

QC Criteria	Review COC for
Holding Time & Preservation	√
Initial Calibration	
Initial Calibration Verification	
CRQL Standard	√
Blanks-Initial & Continuing	
Preparation Blank	√
ICP Interference Check Sample	
Pre- Digestion/Distillation Matrix Spike	√
Post Digestion Spike	
Laboratory Duplicate	√
Field Duplicates Comparison	√
Lab Control Sample	√
ICP Serial Dilution	√
Field Blank Contamination	√
Percent Solids	√
Transcription/Computation Check	√
Raw Data	
Total vs. Dissolved Concentrations Comparison	√

- The CSF (Complete SDG File) audit will be completed before the PES validation strategy is applied.
- Comparison of the Lotus or XLS Spreadsheet must be after the PES validation strategy is applied.
- The Contract Compliance can be checked after the PES validation strategy is applied.

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8.0 Sampling Trip Report

The sampler prepares a Sampling Trip Report for each sampling event and sends it to the RSCC. The report provides details of all activities performed for each sampling event on the Superfund site. It also lists the field QC samples such as Field Duplicates, Field/Rinse Blanks, sampling time and date for each sample, and samples associated with each field/rinse blank. The validator must use this information to evaluate the Field Duplicate pairs as well as the samples associated with contaminated Field/Rinse Blanks.

9.0 Telephone Record Log (Appendix A.3)

A Telephone Record Log (Appendix A.3) must be written by the data validator when a deliverable is missing or a clarification is needed about a lab procedure. The data validator should outline a basic profile of the Case on the Telephone Record Log Form, clearly indicating the reason(s) for inquiry and forward this Form to CLP PO/TOPO who will contact the lab to receive the missing document or information. The original Telephone Record Log is kept in the data package and a copy attached to the Data Review Narrative.

10.0 Request for Re-Analysis (Appendix A.6)

Data validator must note all items of contract non-compliance in the Data Review Narrative. If holding times and sample storage times have not been exceeded, the Project Officer (PO) may request re-analysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record" form (Appendix A.4).

1.0 CLP Data Assessment Summary Form (Appendix A.7)

Fill in the total number of analytes performed by different methods and the number of analytes rejected (R) or flagged (J) as estimated due to corresponding quality control criteria. Place an "X" in boxes wherever analyses were not performed, or criteria do not apply.

2.0 Data Review Log:

It is recommended that the data validator maintain a log of the reviews completed to document:

- a. Case number
- b. SDG # (s)
- c. number of samples
- d. matrix of samples
- e. contract laboratory
- f. site name
- g. start-date of the data case review
- h. completion-date of the data case review
- i. actual hours spent
- j. reviewer's signature

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13.0 Record of Communication -

This is a Regional document prepared and provided by the RSCC for each data package. The ROC indicates the Case #, site name, samples and sample matrix and the laboratory name. The presence of a ROC in a data package is an indication that the package has been reviewed by the RSCC for completeness and is ready for data validation.

14.0 Forwarded Paperwork

Upon completion of review, the following are to be forwarded to EPA for final review:

- a. Data package
- b. Completed data assessment checklist (Appendix A.1, original)
- c. Original and a copy of completed data review narrative Appendix A.2)
- d. CLASS Contract Compliance Screening (CCS) report
- e. Telephone Record Log (Appendix A.3)
- f. Field Duplicates Form (Appendix A.4)
- g. Total/Dissolved Concentrations Form (Appendix A.5)
- h. CLP Re-analysis Request/Approval Record Form (Appendix A.6)
- i. Data Assessment Summary Form (Appendix A.7)
- j. CADRE Spreadsheet on a computer diskette.

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ACRONYMS

AA	Atomic Absorption
AOC	Analytical Operations/Data Quality Center
CADRE	Computer-Aided Data Review and Evaluation
CCB	Continuing Calibration Blank
CCS	Contract Compliance Screening
CCV	Continuing Calibration Verification
CLP	Contract Laboratory Program
CO	Contracting Officer
COC	Contaminants of Concern
CRI	CRQL Check Standard
CRQL	Contract Required Quantitation Limit
CSF	Complete SDG File
CVAA	Cold Vapor AA
DART	Data Assessment Rapid Transmittal
DAT	Data Assessment Tool
DF	Dilution Factor
DQO	Data Quality Objective
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICP-AES	Inductively Coupled Plasma - Atomic Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma - Mass Spectrometry
ICS	Interference Check Sample
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LRS	Linear Range Sample
MDL	Method Detection Limit
NIST	National Institute of Standards and Technology
OSERR	Office of Emergency and Remedial Response
OSWER	Office of Solid Waste and Emergency Response
PB	Preparation Blank
PE	Performance Evaluation
%D	Percent Difference
%R	Percent Recovery
%RI	Percent Relative Intensity
%RSD	Percent Relative Standard Deviation
%S	Percent Solids
PO	Project Officer
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RPD	Relative Percent Difference
SCC	Regional Sample Control Center
SDG	Sample Delivery Group
SOMO	Sample Management Office
SOP	Standard Operating Procedure
SOW	Statement of Work
TAL	Target Analyze List

TR/COC Traffic Report/Chain of Custody Documentation
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Inorganic Target Analyze List And Contract Required Quantitation Limits (CRQLs)

Analyze	CAS Number	ICP-AES CRQL	ICP-AES CRQL	ICP-MS CRQL
		Water Ug/L	Soil mg/kg	Water Ug/L
Aluminum	7429-90-5	200	20	---
Antimony	7440-36-0	60	6	2
Arsenic	7440-38-2	10	1	1
Barium	7440-39-3	200	20	10
Beryllium	7440-41-7	5	0.5	1
Cadmium	7440-43-9	5	0.5	1
Calcium	7440-70-2	5000	500	-----
Chromium	7440-47-3	10	1	2
Cobalt	7440-48-4	50	5	1
Copper	7440-50-8	25	2.5	2
Iron	7439-89-6	100	10	----
Lead	7439-92-1	10	1	1
Magnesium	7439-95-4	5000	500	-----
Manganese	7439-96-5	15	1.5	1
Mercury	7439-97-6	0.2	0.1	---
Nickel	7440-02-0	40	4	1
Potassium	7440-09-7	5000	500	-----
Selenium	7782-49-2	35	3.5	5
Silver	7440-22-4	10	1	1
Sodium	7440-23-5	5000	500	-----
Thallium	7440-28-0	25	2.5	1
Vanadium	7440-62-2	50	5	1
Zinc	7440-66-6	60	6	2
Cyanide	57-12-5	10	2.5	--

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Site: DIAMOND HEAD OIL

Case #: 37193

SDG #: MB4TL1, MB4TL6

Samples: 15 Soil 2 Water

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		YES	NO	N/A	
1.1	<u>Contract Compliance Screening Report</u> Present?	[<input checked="" type="checkbox"/>]	—	—	
	<u>ACTION:</u> If no, contact RSCC/PO.				
1.2	<u>Record of Communication (from RSCC)</u> Present?	[<input checked="" type="checkbox"/>]	—	—	
	<u>ACTION:</u> If no, request from the RSCC.				
1.3	<u>Sampling Trip Report</u> Present and complete?	[<input checked="" type="checkbox"/>]	—	—	
	<u>ACTION:</u> If no, contact RSCC/PO.				
1.4	<u>Chain of Custody/Sample Traffic Report</u> Present?	[<input checked="" type="checkbox"/>]	—	—	
	Legible?	[<input checked="" type="checkbox"/>]	—	—	
	Signature of sample custodian present?	[<input checked="" type="checkbox"/>]	—	—	
	<u>ACTION:</u> If no, contact RSCC/WAM/PO.				
1.5	<u>Cover Page</u> Present?	[<input checked="" type="checkbox"/>]	—	—	
	Is the Cover Page properly filled in and the verbatim signed by the lab manager or the manager's designee?	[<input checked="" type="checkbox"/>]	—	—	
	Do the sample identification numbers on the Cover Page agree with sample Identification numbers on:				
	(a) Traffic Report Sheet?	[<input checked="" type="checkbox"/>]	—	—	
	(b) Form I's?	[<input checked="" type="checkbox"/>]	—	—	
	Is the number of samples on the Cover Page the same as the number of				

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samples on the Traffic Report sheet
and the Regional Record of Communication
(ROC) for the data Case?

<u>YES</u>	<u>NO</u>	<u>N/A</u>
[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]

ACTION:

If no for any of the above, prepare
Telephone Record Log and contact RSCC/PO
for re-submittal of the corrected Cover Page
from the laboratory.

1.6 **SDG Narrative, DC-1 & DC-2 Form**

Is the SDG Narrative present?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

Is Sample Log-In Sheet (Form DC-1)
present and complete?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

Is Complete SDG Inventory Sheet (Form DC-2)
present and complete?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

ACTION:

If no, write in the Contract-Problems/
Non-Compliance Section of the Data Review
Narrative.

.7 **Form I to XV**

.7.1 Are all the Form I through Form XV
labeled with:

Laboratory Name?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

Laboratory Code?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

RAS/Non-RAS Case No.?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

SDG No.?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

Contract No.?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	[<input type="checkbox"/>]
---	------------------------------	------------------------------

ACTION:

If no for any of the above, note under
Contract Problem/Non-Compliance Section
of the "Data Review Narrative" and contact
PO for corrected Form(s) from the laboratory.

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			<u>YES</u>	<u>NO</u>

- | | | | | |
|------|--|---|---|---------------------------------------|
| .7.2 | After comparing values on Forms I-IX against the raw data, do any computation/transcription errors exceed 10% of the reported values on the Forms for: | | | |
| | (a) all analytes analyzed by ICP-AES? | — | [<input checked="" type="checkbox"/>] | — <input checked="" type="checkbox"/> |
| | (b) all analytes analyzed by ICP-MS? | — | [<input type="checkbox"/>] | — <input checked="" type="checkbox"/> |
| | (c) Mercury? | — | [<input checked="" type="checkbox"/>] | — <input checked="" type="checkbox"/> |
| | (d) Cyanide? | — | [<input type="checkbox"/>] | — <input checked="" type="checkbox"/> |

ACTION:
If yes, prepare Telephone Record Log and contact CLP PO/TOPO for the corrected data from the laboratory.

1.8 **Raw Data**
Data shall not be validated without the hard/electronic copies of the associated raw data for samples and QC samples.

- | | | | | |
|-------|--|---|---|---------------------------------------|
| 1.8.1 | Digestion/Distillation Log | | | |
| | Digestion Log for ICP-AES (Form XII) present? | [<input checked="" type="checkbox"/>] | — | — |
| | Digestion Log for ICP-MS (Form XII) present? | [<input type="checkbox"/>] | — | — <input checked="" type="checkbox"/> |
| | Digestion Log for mercury (Form XII) present? | [<input checked="" type="checkbox"/>] | — | — |
| | Distillation Log for cyanide (Form XII) present? | [<input type="checkbox"/>] | — | — <input checked="" type="checkbox"/> |
| | Are pH values for metals and cyanide reported for each aqueous sample? | [<input checked="" type="checkbox"/>] | — | — |
| | Are percent solids calculations present for soils/sediments? | [<input checked="" type="checkbox"/>] | — | — |
| | Are preparation dates present on the sample preparation logs/bench sheets? | [<input checked="" type="checkbox"/>] | — | — |

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YES NO N/A

NOTE:

Digestion/Distillation log must include weights, volumes, and dilutions used to obtain the reported results.

1.8.2 Is the analytical instrument
real-time printouts present for:

ICP-AES?

☒ ☐ ☐

ICP-MS?

☐ ☐ ☒

Mercury?

☒ ☐ ☐

Cyanide?

☐ ☐ ☒

Are all laboratory bench sheets
and instrument raw data printouts
necessary to support all sample
analyses and QC operations:

Legible?

☒ ☐ ☐

Properly labeled?

☒ ☐ ☐

Are all field samples, QC samples
and field QC samples present on:

Digestion/Distillation log?

☒ ☐ ☐

Instrument Printouts?

☒ ☐ ☐

ACTION:

If no for any of the above questions in
Section A.1.8.1 and Section A.1.8.2, write
Telephone Record Log and contact TOPO/PO
for re-submittal from the laboratory.

9 **Technical Holding Times:** (Aqueous and soil samples)
(Examine sample Traffic Reports and digestion/distillation logs to
determine the holding time from the sample collection date to the sample
preparation date.)

9.1 Cyanide distillation(14 days)exceeded?

☐ ☐ ☒

Mercury analysis(28 days) exceeded?

☐ ☒ ☐

Other Metals analysis(180 days)exceeded?

☐ ☒ ☐

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YES

NO

N/A

ACTION:

If yes, reject (R) and red-line non-detects and flag as estimated (J) results \geq MDL even if sample(s) was preserved properly.

NOTE:

In addition to qualifying the data, a list of all samples and analytes which exceeded the holding times must be prepared. Report for each sample the number of days that were exceeded. (Subtract the sample collection date from the sample preparation date). Attach this list to the data review narrative.

1.9.2 Is pH of aqueous samples for:

Metals Analysis ≤ 2 ?

☒

Cyanide Analysis ≥ 12 ?

☐

☒

ACTION:

If no for any of the above, flag non-detects as "R" and detects as "J".

1.9.3 Is the cooler temperature ≤ 10 C°?

☒

ACTION:

If cooler temperature is >10 °C, flag non-detects as "UJ" and detects as "J".

1.10 Final Data Correctness - Form I

1.10.1 Are Form I's for all samples present and complete?

☒

ACTION:

If no, prepare Telephone Record Log and contact CLP PO/TOPO for submittal from the laboratory.

1.10.2 Verify there are no calculation and transcription errors in the results reported on Form I's. Circle on each Form I all results that are incorrect.

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
Is the calculation error less than 10% of the correct result?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are results on Form I's reported in correct units (ug/L for aqueous and MG/KG for soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are results on Form I'S reported by correct significant figures?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are soil sample results on Form I's corrected for percent solids?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are all "less than MDL" values reported by the CRQLs and coded with "U"?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are values less than the CRQLs but greater than or equal to the MDLs flagged with "J"?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are appropriate contractual quality control and Method qualifiers used?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above questions, prepare Telephone Record Log, and contact CLP PO/TOPO for corrected data.

.10.3 Do EPA sample identification numbers and the corresponding laboratory sample identification numbers match on the Cover Page, Form I's and in the raw data?

☒ ☐ ☐

Was a brief physical description of the samples before and after digestion given on the Form I's?

☒ ☐ ☐

Was any sample result outside the mercury/cyanide calibration range or the ICP-AES/ICP-MS linear range diluted and noted on the Form I?

☒ ☒ ☐

ACTION:

If no for any of the above, note under the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

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YES NO N/A

1.11 Initial Calibration

1.11.1 Is a record of at least 2 point
(A blank and a standard) calibration
present for ICP-AES analysis? [] — ✓

Is a record of at least 2 point
(a blank and a standard) calibration
present for ICP-MS analysis? [] — ✓

Is a record of at least 5 point calibration
(a blank & 4 standards) present for Hg analysis? [] — ✓

Is a record of at least 4 point calibration
(a blank & 4 standards) present for cyanide? [] — ✓

ACTION:

If incomplete or no initial calibration
was performed, reject (R) and red-line
the associated data (detects & non-detects).

Is one initial calibration standard
at the CRQL level for cyanide and
mercury? [] — ✓

ACTION:

If no, write in the Contract Problem/
Non-Compliance Section of the Data
Review Narrative.

1.11.2 Is the curve correlation
coefficient ≥ 0.995 for:

Mercury Analysis? [] — ✓

Cyanide Analysis? [] — ✓

ICP-AES (more than 2 point Calib.)? [] — ✓

ICP-MS (more than 2 point calib.)? [] — ✓

ACTION:

If no, qualify the associated sample
results \geq MDL as estimated "J" and
non-detects as "UJ".

NOTE:

The correlation coefficient shall
be calculated by the data validator
using standard concentrations and the

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YES NO N/A

corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

1.12 Initial and Continuing Calibration Verification- Form IIA

1.12.1 Present and complete for every metal and cyanide?

[] — ☒

Present and complete for ICP-AES and ICP-MS when both these methods were used for the same analyte?

[] — ☒

ACTION:

If no for any of the above, prepare a Telephone Record Log and contact PO/TOPO for re-submittal from the laboratory.

1.12.2 Was a Continuing Calibration Verification performed every 10 samples or every 2 hours whichever is more frequent?

[] — ☒

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative.

1.12.3 Was an ICV or a mid-range standard distilled and analyzed with each batch of cyanide samples?

[] — ☒

ACTION:

If no for any of the above, write in the Contract-Problem/Non-Compliance Section of the Data Review Narrative and qualify results \geq MDL as estimated (J).

1.12.2 Circle on each Form IIA all percent recoveries that are outside the contract windows.

Are ICV/CCVs within control limits for:

Metals - 90-110%R?

[] — ☒

Hg - 80-120%R?

[] — ☒

Cyanide - 85-115%R?

[] — ☒

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YES NO N/A

ACTION:

If no, qualify all samples between a previous technically acceptable CCV standard and a subsequent technically acceptable CCV standard as follows as follows:

Qualify as estimated (J) all detects and non-detects, if the ICV/CCV %R is between 75-89% (65-79% for Hg; 70-84% for CN). Qualify only positive results (\geq MDL) as "J" if the ICV/CCV %R is between 111-125% (121-135% for Hg; 116-130% for CN). Reject (R) and red-line only detects if the recovery is greater than 125% (135% for Hg; 130% for CN). Reject (R) and red-line all associated results (hits and non-detects) if the recovery is less than 75% (65% for Hg; 70% for CN).

NOTE:

For ICV that does not fall within the acceptance limits, qualify all samples reported from the analytical run.

- 1.12.3 Was the distilled ICV or mid-range standard for cyanide within acceptance limits (85-115%)? [] — ✓

ACTION:

If no, Qualify all cyanide results \geq MDL as "J".

1.13 CRQL Standard Analysis - Form IIB

- 1.13.1 For each ICP-AES run, was a CRI (CRQL or MDL when MDL > CRQL) standard analyzed? [✓] — —
(Note: CRI is not required for Al, Ba, Ca, Fe, Mg, Na and K.)

For each ICP-MS run, was a CRI (CRQL or MDL when MDL > CRQL) standard analyzed for each mass/isotope used for the analysis? [] — ✓

For each mercury run, was a CRQL standard analyzed? [✓] — —

For each cyanide run, was a CRQL standard analyzed? [] — ✓

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ACTION:

YES NO N/A

If no for any of the above, write this deficiency in the Contract Problems/Non-Compliance Section of the Data Review Narrative, inform CLP PO and flag results in the affected ranges (detects <2xCRQL) as J and non-detects UJ.

The affected ranges are:

ICP-AES Analysis - *True Value \pm CRQL

ICP-MS Analysis - *True Value \pm CRQL

Mercury Analysis - *True Value \pm CRQL

Cyanide Analysis - *True Value \pm CRQL

* True value of the CRQL Standard

- 1.13.2 Was a CRQL standard analyzed after the ICV/ICB, before the final CCV/CCB and once every 20 analytical samples in the analytical run for each analysis?

☒ ☐ ☐

ACTION:

If no, write in the Contract Problem/Non-Compliance Section of the "Data Review Narrative".

- .13.3 Circle on each Form IIB all percent recoveries that are outside the acceptance windows.

Is the CRQL standard within control limits for:

Metals (ICP-AES/ICP-MS) - 70 - 130%?

☒ ☒ ☐

Mercury - 70 - 130%?

☒ ☐ ☐

Cyanide - 70 - 130%?

☐ ☐ ☒

ACTION:

If no, flag detects <2xCRQL as "J" and non-detects as "UJ" if the CRQL standard recovery is between 50-69%. Flag (J) only detects <2xCRQL if the recovery is between 131% and \leq 180%. If the recovery is less than 50%, reject (R) and red-line non-detects and detects < 2xCRQL, and flag (J) detects between 2xCRQL and ICV/CCV. Reject and red-line only detects <2xCRQL and flag (J) detects \geq 2xCRQL but < ICV/CCV if the recovery is > 180%.

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YES NO N/A

NOTE:

1. Qualify all field samples analyzed between a previous technically acceptable analysis of the CRQL standard and a subsequent acceptable analysis of the CRQL standard
2. Flag (J) or reject (R) only the final sample results on Form I's when Sample raw data are within the affected ranges and the CRQL standard is outside the acceptance windows.
3. The samples and the CRQL standard must be analyzed in the same analytical run.

1.14 Initial and Continuing Calibration Blanks - Form III

1.14.1 Present and complete for all the instruments used for the metals and cyanide analyses?

[☒] — —

Was an initial Calibration Blank analyzed after ICV?

[☒] — —

Was a continuing Calibration Blank analyzed after every CCV and every 10 samples or every 2 hours, whichever is more frequent?

[☒] — —

Were the ICB & CCB values \geq MDL but $<$ CRQL reported on Form III and flagged "J" by using MDLs from direct analysis (Preparation Method "NP1")?
(Check Form III against the raw data)

[☒] — —

ACTION:

If no, inform CLP PO/TOPO and make a note in the Contract-Problems/Non-Compliance Section of the "Data Review Narrative".

1.14.2 Circle with red pencil on each Form III all Calib. Blank values that are:

\geq MDL but \leq CRQL

$>$ CRQL

1.14.2.1 When MDL $<$ CRQL, is any Calib. Blank value \geq MDL but \leq CRQL?

[☒] [] —

ACTION:

If yes, change sample results \geq MDL but \leq CRQL to the CRQL with a "U".
Do not qualify non-detects.

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YES NO N/A

1.14.2.2 When MDL < CRQL, is any Calib. Blank value > CRQL?

— [✓] —

ACTION:

If yes, reject (R) and red line the associated sample results > CRQL but < ICB/CCB Blank Result. Flag as "J" detects > ICB/CCB blank value but < 10xICB/CCB value. Change the sample results ≥ MDL but ≤ the CRQL to CRQL with a "U".

1.14.2.3 Is any Calibration Blank value below the negative CRQL?

— [✓] —

ACTION:

If yes, flag (J) as estimated all associated sample results ≥ CRQL but < 10xCRQL.

NOTE:

1. For ICB that does not meet the technical QC Criteria, apply the action to all samples reported from the analytical run.
2. For CCBs that do not meet the technical QC criteria, apply the action to all samples analyzed between a previous technically acceptable analysis of CCB and a subsequent technically acceptable analysis of the CCB in the analytical run.

15 **Preparation Blank - FORM III**

NOTE: The Preparation Blank for mercury is the same as the calibration blank.

15.1 Was one Preparation Blank prepared with and analyzed for:

Each Sample Delivery Group (SDG)?

[✓] — —

Each batch of the SDG samples digested/distilled?

[✓] — —

Each matrix type?

[✓] — —

All instruments used for metals and cyanide analyses?

[✓] — —

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YES NO N/A

ACTION:

If no for any of the above, flag as estimated (J) all the associated positive data <10xMDL for which the Preparation Blank was not analyzed.

NOTE:

If only one blank was analyzed for more than 20 samples, then the first 20 samples analyzed are not estimated (J), but all additional samples must be qualified (J).

1.15.2 Circle with red pencil on each Form III all Prep. Blank values that are:

\geq MDL but \leq CRQL, and

$>$ CRQL

1.15.2.1 When MDL < CRQL, is any preparation blank value \geq MDL but \leq CRQL?

☒ ☐ ☐

ACTION:

If yes, change sample result \geq MDL but \leq CRQL to CRQL with a "U".

1.15.2.2 When the MDL \leq CRQL, is any Preparation Blank value greater than its CRQL?

☐ ☒ ☐

If yes, is the Prep. Blank value greater than the value of the associated Field Blank collected and analyzed with the SDG samples?

☐ ☐ ☒

If yes, is the lowest concentration of that analyte in the associated samples less than 10 times the Preparation Blank value?

☐ ☐ ☒

ACTION:

If yes, reject (R) and red-line all associated sample results greater than the CRQL but less than the Prep. Blank value. Flag as "J" detects $>$ Prep. Blank value but $<10 \times$ Prep. Blank. If the sample result \geq MDL but \leq CRQL, replace it with CRQL-U.

If the Prep. Blank value is less than the same

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analyte value in the Field Blank, do not
qualify the sample results due to the
Prep. Blank criteria.

YES NO N/A

NOTE:

Convert soil sample result to mg/Kg on
wet weight basis to compare with the soil
Prep. Blank result on Form III.

1.15.2.3 Is the Prep. Blank concentration
below the negative CRQL?

___ ☒ ___

ACTION:

If yes, flag (J) all associated
sample results less than 10xCRQL.
Qualify non-detects as estimated (UJ).

..15.2.4 When the MDL is greater than the
CRQL, is the preparation blank
concentration on Form III greater
than two times the MDL?

___ ☐ ☒

ACTION:

If yes, reject (R) and red-line all
positive sample results with sample
raw data less than 10 times the
Preparation Blank value.

.16 **ICP-AES/ICP-MS Interference Check Sample (ICS) - Form IV**
NOTE: Not required for CN, Hg, Al, Ca, Fe and Mg.

.16.1 Present and complete?

☒ ___

Was ICS analyzed at the beginning
and end of each analytical run, and
once for every 20 analytical samples?

☒ ___

Was ICS analyzed at the beginning of
the ICP-MS analytical run?

☐ ___ ☒

ACTION:

If no, flag as estimated (J) all
sample results.

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YES

NO

N/A

.16.2 ICP-AES Method

.16.2.1 ICSA Solution:

For ICP-AES, are the ICSA "Found" analyte values within the control limits \pm of CRQL of the true/established mean value?

[☒] — —

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSA Solution on Form IV?

[☐] — ☒

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated only sample results \geq MDL for which the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag non-detects as "UJ" and detects as "J".

.16.2.3 ICSAB Solution

For ICP-AES, are all analyte results in ICSAB within the control limits of 80-120 of the true/established mean value?

[☒] — —

If no for any of the above, is the sample concentration of Al, Ca, Fe, or Mg in the same units (ug/L or MG/KG) greater than or equal to its respective concentration in the ICSAB Solution on Form IV?

[☐] — ☒

ACTION:

If yes, apply the following action to all samples analyzed between a previous technically acceptable analysis of the ICS and a subsequent technically acceptable analysis of the ICS in the analytical run:

Flag (J) as estimated those associated sample results \geq MDL for which the ICSAB analyte recovery is greater than 120% but \leq 150%. If the ICSAB recovery falls within

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YES NO N/A

50-79%, qualify sample results \geq MDL as "J" and non-detects as "UJ". Reject (R) and red-line all sample results (detects & non-detects) for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only positive results.

..16.3 ICP-MS Method

..16.3.1 ICSA Solution:

For ICP-MS, are the ICSA "Found" analyte values within the control limits of \pm CRQL of the true/established mean value?

[] — /

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated only sample results \geq MDL if the ICSA "Found" value is greater than (True value+CRQL). Do not qualify non-detects. If the ICSA "Found" value is less than (True value-CRQL), flag the associated sample detects as "J" and non-detects as "UJ".

..16.3.3 ICSAB Solution

For ICP-MS, are all analyte results in ICSAB within the control limits of 80-120% of the true/established mean value, whichever is greater?

[] — /

ACTION:

If no, apply the following action to all samples reported from the analytical run:

Flag (J) as estimated those associated sample results \geq MDL for which the ICSAB analyte recovery is greater than 120% but \leq 150%. If the ICSAB recovery falls within 50-79% flag (J) as estimated the associated sample results \geq MDL. Reject (R) and red-line those all sample detects and non-detects for which the ICSAB analyte recovery is less than 50%. If the recovery is above 150%, reject (R) and red-line only detects (\geq MDL).

17 Spiked Sample Recovery: Pre-Digestion/Pre-Distillation)-Form V A
Note: Not required for Ca, Mg, K, and Na (both matrices); Al and Fe (soil only)

17.1 Was Matrix Spike analysis performed:

For each matrix type?

[] — /

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
For each SDG?	[<input checked="" type="checkbox"/>]	___	___
On one of the SDG samples?	[<input checked="" type="checkbox"/>]	___	___
For each concentration range (i.e., low, med., high)?	[<input checked="" type="checkbox"/>]	___	___
For each analytical Method (ICP-AES, ICP-MS, Hg, CN) used?	[<input checked="" type="checkbox"/>]	___	___
Was a spiked sample prepared and analyzed with the SDG samples?	[<input checked="" type="checkbox"/>]	___	___

ACTION:

If no for any of the above, flag as estimated (J) all the positive data for which a spiked sample was not analyzed.

NOTE:

If more than one spiked sample were analyzed for one SDG, then qualify the associated data based on the worst spiked sample analysis.

..17.2 Was a field blank or PE sample used
for the spiked sample analysis? ___ [☒] ___

ACTION:

If yes, flag (J) as estimated positive data of the associated SDG samples for which field blank or PE sample was used for the spiked sample analysis.

..17.3 Circle on each Form VA all spike recoveries that are outside the control limits (75-125%) that have sample concentrations less than four times the added spike concentrations.

Are all recoveries within the control limits when sample concentrations are less than or equal to four times the spike concentrations?

[☐] ☒ ___ ___

NOTE:

Disregard the out of control spike recoveries for analytes whose concentrations are greater than or equal to four times the spike added.

Are results outside the control limits

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(75-125%) flagged with Lab Qualifier "N" on Form I's and Form VA?

<u>YES</u>	<u>NO</u>	<u>N/A</u>
[<input checked="" type="checkbox"/>]	—	—

ACTION:

If no for any of the above, write in the Contract - Problems/Non-Compliance Section of the Data Review Narrative.

1.17.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?

—	[<input type="checkbox"/>]	[<input checked="" type="checkbox"/>]
---	------------------------------	---

(b) between 30-74%?

—	[<input type="checkbox"/>]	[<input checked="" type="checkbox"/>]
---	------------------------------	---

(c) between 126-150%?

—	[<input type="checkbox"/>]	[<input checked="" type="checkbox"/>]
---	------------------------------	---

(d) greater than 150%?

—	[<input type="checkbox"/>]	[<input checked="" type="checkbox"/>]
---	------------------------------	---

ACTION:

If the matrix spike recovery is less than 30%, reject (R) and red-line all associated aqueous data (detects & non-detects). If between 30-74%, qualify all associated aqueous data \geq MDL as "J" and non-detects as "UJ". If between 126-150%, flag (J) all data \geq MDL as "J". If greater than 150%, reject (R) and red-line all associated data \geq MDL.

(NOTE: Replace "N" with "J", "R" as appropriate.)

1.17.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?

—	[<input checked="" type="checkbox"/>]	—
---	---	---

(b) between 10-74%?

[<input checked="" type="checkbox"/>]	[<input type="checkbox"/>]	—
---	------------------------------	---

(c) between 126-200%?

—	[<input type="checkbox"/>]	—
---	------------------------------	---

(d) greater than 200%?

—	[<input checked="" type="checkbox"/>]	—
---	---	---

ACTION:

If yes for any of the above, proceed as follows:

If the matrix spike recovery is less than 10%, reject (R) and red-line all associated data (detects & non-detects); if between 10-74%, qualify all associated data \geq MDL as "J" and non-detects as "UJ";

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YES NO N/A

if between 126-200%, flag (J) all associated data \geq MDL as "J" If greater than 200%, reject (R) and red-line all associated data \geq MDL.
(NOTE: Replace "N" with "J" or "R" as appropriate.)

1.18 Lab Duplicates) - Form VI

1.18.1 Was the lab duplicate analysis performed:

For each SDG?

☒ ☐ ☐

On one of the SDG samples?

☒ ☐ ☐

For each matrix type?

☒ ☐ ☐

For each concentration range
(low or med.)?

☒ ☐ ☐

For each analytical Method
(ICP-AES/ICP-MS, Hg, CN) Used?

☒ ☐ ☐

Was a lab duplicate prepared and
analyzed with the SDG samples?

☒ ☐ ☐

ACTION:

If no for any of the above, flag (J) as estimated all the SDG sample results (detects & non-detects) for which the lab duplicate analysis was not performed.

NOTE:

If more than one lab duplicate sample were analyzed for an SDG, then qualify the associated samples based on the worst lab duplicate analysis.

1.18.2 Was a Field Blank or PE sample used
for the Lab Duplicate analysis?

☐ ☒ ☐

ACTION:

If yes, flag as estimated (J) all SDG sample results (hits & non-detects) for which Field Blank or PE sample was used for duplicate analysis.

1.18.3 Circle on each Form VI all values
that are:

RPD > 20%, or

Absolute Difference > CRQL

Are all values within control
limits (RPD \leq 20% or absolute

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
difference $\leq \pm$ CRQL)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no, are all results outside the control limits flagged with an "*" (Lab Qualifier) on Form VI and on all Form I's?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If no, write in the Contract-Problems/Non-Compliance Section of the Data Review Narrative.

NOTE:

The laboratory is not required to report on Form VI the RPD when both values are non-detects.

.18.4 Aqueous

.18.4.1 When sample and duplicate values are both $\geq 5 \times \text{CRQL}$ (substitute MDL for CRQL when MDL > CRQL),

is any RPD > 20% but < 100%?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

is any RPD $\geq 100\%$?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

ACTION:

If the RPD is > 20% but < 100%, flag (J) as estimated the associated sample data $\geq \text{CRQL}$. If the RPD is $\geq 100\%$, reject (R) and red-line the associated sample data $\geq \text{CRQL}$.

(NOTE: Replace "*" with "J" or "R" as appropriate.)

.18.4.2 When the sample and/or duplicate value $< 5 \times \text{CRQL}$ (substitute MDL for CRQL when MDL > CRQL), is the absolute difference between sample and duplicate values:

> $\pm \text{CRQL}$?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	-------------------------------------

> $\pm 2 \times \text{CRQL}$?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------

ACTION:

If the absolute difference is > CRQL, flag as estimated all the associated sample results $\geq \text{MDL}$ but $< 5 \times \text{CRQL}$ as "J" and non-detects as "UJ". If the absolute difference is > $2 \times \text{CRQL}$, reject (R) and

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YES NO N/A

red-line all the associated non-detects
and detects \geq MDL but $< 5 \times \text{CRQL}$.

NOTE:

1. Replace "*" with "J", "UJ" or "R" as appropriate.)
2. If one value is $> \text{CRQL}$ and the other value is non-detect,
calculate the absolute difference between the value $> \text{CRQL}$
and the MDL, and use this difference to qualify sample results.

18.5 Soil/Sediment

18.5.1 When sample and duplicate values
are both $\geq 5 \times \text{CRQL}$ (substitute MDL for
CRQL when MDL $> \text{CRQL}$),

is any RPD $\geq 35\%$ but $< 120\%$?

— [☒] —

is any RPD $\geq 120\%$?

— [☒] —

ACTION:

If the RPD is $\geq 35\%$ and $< 120\%$, flag
(J) as estimated the associated sample
data $\geq \text{CRQL}$. If the RPD is $\geq 120\%$, reject
(R) and red-line the associated sample
data $\geq \text{CRQL}$.

18.5.2 When the sample and/or duplicate value
 $< 5 \times \text{CRQL}$ (substitute MDL for CRQL when MDL $> \text{CRQL}$),
is the absolute difference between sample
and duplicate:

$> \pm 2 \times \text{CRQL}$?

— [☒] —

$> \pm 4 \times \text{CRQL}$

— [☒] —

ACTION:

If the absolute difference is $> 2 \times \text{CRQL}$,
flag all the associated sample results $\geq \text{MDL}$
but $< 5 \times \text{CRQL}$ as "J" and non-detects as "UJ".
If the absolute difference is $> 4 \times \text{CRQL}$, reject
(R) and red-line all the associated non-detects
and detects $\geq \text{MDL}$ but $< 5 \times \text{CRQL}$.

NOTE:

1. Replace "*" with "J", "UJ" or "R" as appropriate.)
2. If one value is $> \text{CRQL}$ and the other value is non-detect,
calculate the absolute difference between the value $> \text{CRQL}$
and the MDL, and use this difference to qualify sample results.

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1.19 Field Duplicates

YES NO N/A

Aqueous Field Duplicates

- 1.19.1 Was an aqueous Field Duplicate pair collected and analyzed?
(Check Sampling Trip Report)

[] ☒ ☐

ACTION:

If yes, prepare a Form (Appendix A.4) for each aqueous Field Duplicate pair. Report the sample and Field Duplicate results on Appendix A.4 from their respective Form I's. Calculate and report RPD on Appendix A.4 when sample and its Field Duplicate values are both $> 5 \times \text{CRQL}$. Calculate and report the absolute difference on Appendix A.4 when at least one value (sample or duplicate) is $< 5 \times \text{CRQL}$. Evaluate the aqueous Field Duplicate analysis in accordance with the QC criteria stated in Sections A.1.19.2 and A.1.19.3.

NOTE:

1. Do not transfer "*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when $\text{MDL} > \text{CRQL}$.
4. If one value is $> \text{CRQL}$ and the other value is non-detect, calculate the absolute difference between the value $> \text{CRQL}$ and the MDL, and use this the criteria to qualify the results.

- 1.19.2 Circle all values on the Form (Appendix A.4) for Field Duplicates that have:

$\text{RPD} \geq 20\%$ or

Difference $> \pm \text{CRQL}$

When sample and duplicate values are both $\geq 5 \times \text{CRQL}$ (substitute MDL for CRQL when $\text{MDL} > \text{CRQL}$),

is any $\text{RPD} \geq 20\%$?

is any $\text{RPD} \geq 100\%$?

— [] ☒
— [] ☒

ACTION:

If the RPD is $> 20\%$ but $< 100\%$, flag (J) only the associated sample and its Field Duplicate results $\geq \text{CRQL}$. If the RPD is $\geq 100\%$, reject (R) and red-line only the associated sample and its Field Duplicate result $\geq \text{CRQL}$.

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YES NO N/A

1.19.3 When the sample and/or duplicate value(s)
 <5xCRQL (substitute MDL for CRQL when MDL >CRQL),
 is the absolute difference between sample
 and duplicate:

> ± CRQL?

— [] ✓

> ± 2 x CRQL?

— [] ✓

ACTION:

If the absolute difference is > CRQL,
flag detects ≥ MDL but < 5xCRQL as "J"
and non-detects as "UJ". If the difference
is > 2xCRQL, reject (R) and red-line non-detects
and results ≥ MDL but < 5xCRQL of the sample
and its Field Duplicate.

Soil/Sediment Field Duplicates

1.19.4 Was a soil field duplicate pair
 collected and analyzed?
 (Check Sampling Trip Report)

[✓] — —

ACTION:

If yes, for each soil Field Duplicate
pair proceed as follows:

Prepare Appendix A.4 for each Field Duplicate
pair. Report on Appendix A.4 all sample and its
Field Duplicate results in MG/KG from their
respective Form I's. Calculate and report RPD when
sample and its duplicate values are both greater
than 5xCRQL. Calculate and report the
absolute difference when at least one value
(sample or duplicate) is < 5xCRQL. Evaluate the
Field Duplicate analysis in accordance with the
QC Criteria stated in Sections A.1.19.5 and A.1.19.6.

NOTE:

1. Do not transfer "*" from Form I's to Appendix A.4.
2. Do not calculate RPD when both values are non-detects.
3. Substitute MDL for CRQL when MDL > CRQL.
4. If one value is >CRQL and the other
value is non-detect, calculate the
absolute difference between the
value > CRQL and the MDL, and apply
the criteria to qualify the results.

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YES NO N/A

.19.5 Circle on each Appendix A.4 all values that have:

RPD \geq 35%, or Difference $> \pm 2 \times \text{CRQL}$
When sample and duplicate values are both $\geq 5 \times \text{CRQL}$ (substitute MDL for CRQL when MDL $>$ CRQL),

is any RPD \geq 35% but $<$ 120%?

✓ [] —

is any RPD \geq 120%?

✓ [] —

ACTION:

If the RPD is \geq 35% but $<$ 120%, flag only the associated sample and its Field Duplicate results \geq CRQL as "J". If the RPD is \geq 120%, reject (R) and red-line only the sample and its Field Duplicate results \geq CRQL.

.19.6 When the sample and/or duplicate value(s) $< 5 \times \text{CRQL}$ (substitute MDL for CRQL when MDL $>$ CRQL), is the absolute difference between sample and Field Duplicate:

$> \pm 2 \times \text{CRQL}$?

✓ [] —

$> \pm 4 \times \text{CRQL}$?

— [✓] —

ACTION:

If the absolute difference is $> 2 \times \text{CRQL}$, flag Sample and its Field Duplicate results \geq MDL but $< 5 \times \text{CRQL}$ as "J" and non-detects as "UJ". If the difference is $> 4 \times \text{CRQL}$, reject (R) and red-line non-detects and detects \geq MDL but $< 5 \times \text{CRQL}$ of the sample and its Field Duplicate.

20 **Laboratory Control Sample (LCS) - Form VII**

20.1 Was one LCS prepared and analyzed for:

Each SDG?

[] — ✓

Each matrix type?

[] — ✓

Each batch samples digested/distilled?

[] — ✓

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	YES	NO	N/A
For each Method(ICP-AES, ICP-MS, Hg, CN) used?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Was an LCS prepared and analyzed with the samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--	--------------------------	--------------------------	-------------------------------------

ACTION:

If no for any of the above, prepare Telephone Record Log and contact CLP PO or TOPO for submittal of the LCS results. Flag (J) as estimated all the data for which an LCS was not analyzed.

NOTE:

If only one LCS was analyzed for more than 20 samples, then the first 20 samples analyzed are not flagged(J), but all additional samples must be qualified (J).

1.20.2 Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits 80-120%.

NOTE: 1. Use digested ICV as LCS for aqueous mercury
2. Use distilled ICV as LCS for aqueous cyanide

Is any LCS recovery:

Less than 50%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Between 50% and 79%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Between 121% and 150%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Greater than 150%?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If the LCS recovery is less than 50%, reject (R) and red-line all associated sample data (detects & non-detects); for a recovery between 50-79%, flag detects as "J" all non-detects as "UJ". if the LCS recovery is between 121-150%, flag only detects as "J". if the recovery is greater than 150%, reject (R) and red-line all detects.

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YES

NO

N/A

..20.3 Solid LCS

If an analyte's MDL is equal to or greater than the true value of LCS, disregard the "Action" below for that analyte even though the LCS is out of control limits.

Is the LCS "Found" value greater than the Upper Control Limit reported on Form VII?

—

[]

✓

ACTION:

If yes, flag (J) all the associated detects \geq MDL as estimated (J).

Is the LCS "Found" value lower than the Lower Control Limit reported on Form VII?

—

[]

✓

ACTION:

If yes, flag detects as "J" and non-detects as "UJ".

.21 ICP-AES/ICP-MS Serial Dilution - Form VIII

NOTE: Serial dilution analysis is required only when the initial concentration is equal to or greater than 50 x MDL.

.21.1 Was a Serial Dilution analysis performed:

For each SDG?

[] ✓

—

—

On one of the SDG samples?

[] ✓

—

—

For each matrix type?

[] ✓

—

—

For each concentration range (low or med.)?

[] ✓

—

—

Was a Serial Dilution sample analyzed with the SDG samples?

[] ✓

—

—

ACTION:

If no for any of the above, flag as estimated (J) detects \geq MDL of all the SDG samples for which the ICP Serial Dilution Analysis was not performed.

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YES NO N/A

- 1.21.2 Was a Field Blank or PE sample used
for the Serial Dilution Analysis?

____ [☒] ____

ACTION:

If yes, flag as estimated (J) detects
≥ MDL of all the SDG samples

- 1.21.3 Circle on Form VIII the Percent Differences
(%D) between sample results and its dilution
results that are outside the control limits ± 10%
when initial concentrations ≥ 50 x MDLs.

Are results outside the control
limits flagged with an "E" (Lab Qualifier)
on Form VIII and all Form I's?

[☒] ____ ____

ACTION:

If no, write in the Contract-Problem/
Non-Compliance Section of the Data
Review Narrative.

- 1.21.4 Are any %D values:

> 10%?

[☒] [☐] ____

≥ 100%?

____ [☒] ____

ACTION:

If the Percent Difference (%D) is
greater than 10%, flag (J) as estimated
all associated samples whose raw data ≥ MDL;
if the %D is ≥ 100%, reject (R) and red-line
all associated samples with raw data ≥ MDL.

(NOTE: Replace "E" with "J" or "R" as appropriate.)

1.22 **Total/Dissolved or Inorganic/Total Analytes**

- 1.22.1 Were any analyses performed for
dissolved as well as total analytes
on the same sample(s)?
Were any analyses performed for
inorganic as well as total analytes
on the same sample(s)?

____ [☒] ____
____ [☒] ____

ACTION:

If yes, prepare a Form (Appendix A.5)
to compare the differences between
dissolved (or inorganic) and total
analyte concentrations. Compute each

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difference on Appendix A.5 as a percent of the total analyte only when both of the following conditions are fulfilled:

YES NO N/A

- (1) The dissolved(or inorganic)concentration is greater than total concentration, and
(2) greater than or equal to 5xMDL.

..22.2 Is any dissolved (or inorganic) concentration greater than its total concentration by more than 20%?

— [] ☒

.22.3 Is any dissolved(or inorganic) concentration greater than its total concentration by more than 50%?

— [] ☒

ACTION:

If the percent difference is greater than 20%, flag (J) both dissolved/inorganic and total concentrations as estimated. If the difference is more than 50%, reject (R) and red-line both the values.

..23 **Field Blank - Form I**

NOTE: Designate "Field Blank" as such on Form I

..23.1 Was a Field/Rinsate Bank collected and analyzed with the SDG samples?

☒ — —

If yes, is any Field/Rinsate Blank absolute value of an analyte on Form I greater than its CRQL(or 2xMDL when MDL>CRQL)?

☒ [] —

If yes, circle the Field Blank value on Form I that is greater than the CRQL, (or 2 x MDL when MDL > CRQL).

Is any Field Blank value greater than CRQL also greater than the Preparation Blank value?

— ☒ —

If yes, is the Field Blank value (> CRQL and > the prep. blank value) already rejected due to other QC criteria?

[] — ☒

ACTION:

If the Field Blank value was not rejected, reject all associated sample data (except

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		YES	NO
			N/A

the Field Blank results) greater than the CRQL but less than the Field Blank value. Reject on Form I's the soil sample results whose raw values in ug/L in the instrument printout are greater than the CRQL but less than the Field Blank value in ug/L. Flag as "J" detects between the Field Blank value and 10x Field Blank value. If the sample result \geq MDL but \leq CRQL, replace it with CRQL-U.

If the Field Blank value is less than the Prep. Blank value, do not qualify the sample results due to the Field Blank criteria.

NOTE:

1. Field Blank result previously rejected due to other criteria cannot be used to qualify field samples.
2. Do not use Rinsate Blank associated with soils to qualify water samples and vice versa.

..24 Verification of Instrumental Parameters - Form IX, XA, XB, XI

..24.1 Is verification report present for:

Method Detection Limits (Form IX-Annually)?	[]	—	✓
ICP-AES Interelement Correction Factors (Form XA & XB -Quarterly)?	[]	—	✓
ICP-AES & ICP-MS Linear Ranges (Form XI-Quarterly)?	[]	—	✓

ACTION:

If no, contact CLP PO/TOPO for submittal from the laboratory.

1.24.2 Method Detection Limits - Form IX

1.24.2.1 Are MDLs present on Form IX for:

All the analytes?	[]	—	✓
All the instruments used?	[]	—	✓
Digested and undigested samples and Calib.Blanks?	[]	—	✓
ICP-AES and ICP-MS when both instruments are used for the same analyte?	[]	—	✓

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ACTION:

If no for any of the above, prepare Telephone Record Log and contact CLP PO/TOPO for submittal of the MDLs from the laboratory. Report to CLP PO and write in the Contract Problems/Non-Compliance Section of the Data Review Narrative if the MDL concentration is not less than 1/2 CRQL.

YES NO N/A

1.24.2.2 Is MDL greater than the CRQL for any analyte?

___ [] ☒

If yes, is the analyte concentration on Form I greater than 5 x MDL for the sample analyzed on the instrument whose MDL exceeds CRQL?

[] ___ ☒

ACTION:

If no, flag as estimated (J) all values less than five times MDL for the analyte whose MDL exceeds the CRQL.

.24.3 Linear Ranges - Form XI

.24.3.1 Was any sample result higher than the high linear range for ICP-AES or ICP-MS?

___ [] ☒

Was any sample result higher than the highest calibration standard for mercury or cyanide?

___ [] ☒

If yes for any of the above, was the sample diluted to obtain the result reported on Form I?

[] ___ ☒

ACTION:

If no, flag (J) as estimated the affected detects (\geq MDL) reported on Form I.

.25 ICP-MS Tune Analysis - Form XIV

.25.1 Was the ICP-MS instrument tuned prior to calibration?

[] ___ ☒

ACTION:

If no, reject (R) and red-line all sample data for which tuning was not performed.

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		YES	NO	N/A
1.25.2	Was the tuning solution analyzed or scanned at least five times consecutively?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Were all the required isotopes spanning the analytical range present in the tuning solution?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Was the mass resolution within 0.1 amu for each isotope in the tuning solution?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Was %RSD less than 5% for each isotope of each analyte in the tuning solution?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If no for any of the above, qualify all results \geq MDL associated with that Tune as estimated "J", and all non-detects associated with that Tune as "UJ".

1.26 ICP-MS Internal Standards - Form XV

1.26.1	Were the Internal Standards added to all the samples and all QC samples and calibration standards (except the Tuning Solution)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Were all the target analyte masses bracketed by the masses of the five internal standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ACTION:

If none of the Internal Standards was added to the samples, reject (R) and red-line all the associated sample data (detects & non-detects). If internal standards were used but did not cover all the analyte masses, reject (R) and red-line only the analyte results not bracketed by the internal standard masses.

1.26.2	Was the intensity of an Internal Standard in each sample within 60-125% of the intensity of the same Internal Standard in the calibration blank?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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YES NO N/A

If no, was the original sample diluted
two fold, Internal Standard added and the
sample re-analyzed?

[]

—

✓
—

Was the %RI for the two fold diluted sample
within the acceptance limits (60-125%)?

[]

—

✓
—

ACTION:

If no for any of the above, flag detects
as "J" and non-detects "UJ" of all the
analytes with atomic masses between the

atomic mass of the internal standard lighter
than the affected internal standard, and the
atomic mass of the internal standard heavier
than the affected internal standard.

1.27 **Percent Solids of Sediments**

1.27.1 Are percent solids in sediment(s):

< 50%?

✓
—

[]

—

ACTION:

If yes, qualify as estimated (J) all detects and
non-detects of a sample that has percent solids
less than 50% (i.e., moisture content greater than 50%).

NOTE:

Flag(J) only the sample results
that were not previously flagged
due to other QC criteria.

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HAZ. WASTE SUPPORT SEC

CHEMTECH

284 Sheffield Street

Mountainside, NJ 07092

SDG NARRATIVE

USEPA

SDG # MB4TL1

CASE # 37193

CONTRACT # EPW06047

LAB NAME: CHEMTECH CONSULTING GROUP

LAB CODE: CHEM

CHEMTECH PROJECT #Z1397

A. Number of Samples and Date of Receipt

6 Soil Samples were delivered to the laboratory intact during 02/06/08, 02/07/08 & 02/12/08.

B. Parameters

Test requested for Total Metals (by ICP-AES) and Hg only.

C. Cooler Temp

Indicator Bottle: Presence/Absence

Cooler: 5°C

**D. Detail Documentation (related to Sample Handling
Shipping, Analytical Problem, Temp of Cooler etc):**

Issue 1: Sample not tags were not received with the samples for this Case.

Issue 2: The airbill number listed on the TR/COC does not match the actual airbills for the shipments received on 2/6 and 2/7.

Issue 3: Sample MB4TZ9 is listed on the TR/COC as field QC; however, this sample is a soil sample.

E. Corrective Action taken for above:

Resolution 1: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative, and proceed with the analysis of the samples. Region 2 does not require sample tags.

Resolution 2: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples.

Resolution 3: Per Region 2, sample MB4TZ9 should be a soil field sample.

CHEMTECH

**284 Sheffield Street
Mountainside, NJ 07092**

F. Analytical Techniques:

All analyses were based on CLP Methodology by method ILM05.4

G. Calculation:

Conversion of results from mg/L to mg/kg (Dry Weight Basis):

Calculation for ICP-AES:

$\text{Mg/Kg} = (\text{Result in mg/L for ICP-AES}) \times 1000 \times 100 / \% \text{ Solid} \times \text{Fraction of Sample Amount Taken in Prep.}$

Calculation for Hg:

$\text{Mg/Kg} = (\text{Result in Ug/L-ppb for Hg}) \times 100 / \% \text{ Solid} \times \text{Fraction of Sample Amount Taken in Prep}$

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for Thallium. Duplicate sample did meet requirements. Serial Dilution did meet requirements except Cadmium, Calcium, Iron, Lead and Potassium.

I certify that the data package is in compliance with the terms and conditions of the contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature 

Name: Parveen Hasan

Date 2/28/03

Title: Project Manager

CHEMTECH
284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MB4TL6
CASE # 37193
CONTRACT # EPW06047
LAB NAME: CHEMTECH CONSULTING GROUP
LAB CODE: CHEM
CHEMTECH PROJECT #Z1539

A. Number of Samples and Date of Receipt

9 Soil and 2 Water Samples were delivered to the laboratory intact on 02/14/08, 02/15/08, 02/16/08, 02/19/08 & 02/20/08 .

B. Parameters

Test requested for Total Metals (by ICP-AES) & Hg.

C. Cooler Temp

Indicator Bottle: Presence/Absence
Cooler: 6°C, 5°C, 4°C, 4°C, 5°C respectively.

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

Issue 1: Sample not tags were not received with the samples for this Case.

Issue 2: The airbill number listed on the TR/COC does not match the actual airbills for the shipments received on 2/6 and 2/7.

Issue 3: Sample MB4TZ9 is listed on the TR/COC as field QC; however, this sample is a soil sample.

Issue 4: No sample was designated for laboratory QC for SDG MB4TL6. The laboratory would like to select sample MB4TM4 for laboratory QC.

Issue 5: This Case was scheduled for one water field QC that was not supposed to require lab QC. The lab received one water sample listed on the TR/COC as a field QC sample and sample MB4TM5 which is listed on the TR/COC as a Municipal Water Supply sample. The lab would like to confirm that the water samples do not require lab QC.

CHEMTECH

284 Sheffield Street

Mountainside, NJ 07092

E. Corrective Action taken for above:

Resolution 1: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative, and proceed with the analysis of the samples. Region 2 does not require sample tags.

Resolution 2: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples.

Resolution 3: Per Region 2, sample MB4TZ9 should be a soil field sample.

The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

Resolution 4: In accordance with previous direction from Region 2, the laboratory will select a sample for laboratory QC as long as the sample is not a PE, blank, or rinsate sample and the original analysis and laboratory QC can be performed at full volume. The laboratory will note the issue in the SDG Narrative, notify the SMO coordinator of the sample selected for laboratory QC, and proceed with the analysis of the samples. SMO will note that sample MB4TM4 was selected for laboratory QC.

Resolution 5: Per Region 2, the water samples do not require laboratory QC for this Case. Sample MB4TM5 is a lot blank. The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

F. Analytical Techniques:

All analyses were based on CLP Methodology by method ILM05.4

G. Calculation:

Water Sample Calculation:

For ICP-AES:

Result in Ug/L on Forms = Results in ppm (ICP-AES Raw Data) X 1000 X Dilution Factor (if any)

For Hg:

Result in Ug/L on Forms = Results in ppb (Hg Raw Data) X Dilution Factor (if any)

Soil Sample Calculation:

Conversion of results from mg/L to mg/kg (Dry Weight Basis):

Mg/Kg = (Result in mg/L) X 1000 X 100/ % Solid X Fraction of Sample Amount Taken in Prep.

CHEMTECH

**284 Sheffield Street
Mountainside, NJ 07092**

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for Thallium. Duplicate sample did meet requirements. Serial Dilution did meet requirements except for Potassium.

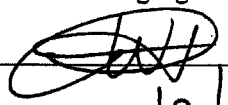
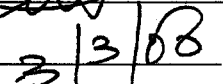
I certify that the data package is in compliance with the terms and conditions of the contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature _____

Name: Parveen Hasan

Date _____

Title: Project Manager





Sample Delivery Group (SDG)
Cover Sheet

SDG Number: MB4TL1

☒ ICP-AES Analysis

☐ ICP-MS Analysis

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HAZ. WASTE SUPPORT SEC

Laboratory Name: CHEMTECH

Laboratory Code: CHEM

Contract No. EPW06047

Case No. 37193

Analysis Price _____

SDG Turnaround 21 days

Modified Analysis (if applicable):

Modification Reference No: N/A

USEPA Sample Numbers in SDG (Listed in Numerical Order)

MB4TL1	MB4TL2	MB4TL2D	MB4TL2S
MB4TL3	MB4TZ9	MB4TL4	MB4TL5

First Sample in SDG

MB4TL1

Last Sample in SDG

MB4TL5

First Sample Receipt Date

2/5/2008 8:45:00 AM

Last Sample Receipt Date

2/12/2008 9:25:00 AM

Note: There are a maximum of 20 **field** samples (excluding PE samples) in an SDG.

Attach TR/COC Records to this form in alphanumeric order (the order listed above on this form).

Signature 

Date 2/12/08

**Sample Delivery Group (SDG)
Cover Sheet**

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HAZ. WASTE SUPPORT SEC

SDG Number: MB4TL6

☒ ICP-AES Analysis

☐ ICP-MS Analysis

Laboratory Name: CHEMTECH

Laboratory Code: CHEM

Contract No. EPW06047

Case No. 37193

Analysis Price _____

SDG Turnaround 21 days

Modified Analysis (if applicable):

Modification Reference No: N/A

USEPA Sample Numbers in SDG (Listed in Numerical Order)

MB4TL6	MB4TL7	MB4TL8	MB4TL9
MB4TM0	MB4TM1	MB4TM2	MB4TM3
MB4TM4	MB4TM4D	MB4TM4S	MB4TM5
MB4TM6			

First Sample in SDG

MB4TL6

Last Sample in SDG

MB4TM6

First Sample Receipt Date

2/14/2008 9:35:00 AM

Last Sample Receipt Date

2/20/2008 9:20:00 AM

Note: There are a maximum of 20 **field** samples (excluding PE samples) in an SDG. Attach TR/COC Records to this form in alphanumeric order (the order listed above on this form).

Signature

Eubani Alo

Date

2/20/08

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